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Appl. No. 10/065,665
Amdt. dated March 29, 2006
Reply to Office action of December 29, 2005

Amendments to the Drawings:

The attached replacement sheets of drawings include changes to Fig. 4 and Fig. 5. The replacement sheet including Fig. 4 replaces the original sheet including Fig. 4. The replacement sheet including Fig. 5 replaces the original sheet including Fig. 5.

5

Attachment: Replacement Sheets

2 page(s)

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REMARKS/ARGUMENTS

1. Amendments to the Drawings

Fig. 4 and Fig. 5 are revised and now respectively include a previously omitted "detecting
5 circuit" for "controlling said third switch according to the first input driving
data and the second input driving data" and for "controlling said third
switch according to the first voltage and the second voltage" as supported by
the original specification in paragraph [0029]: "...the TFT LCD has a detecting
circuit such as a XOR logic circuit for digital driving data or a comparator
10 for analog driving data to compare driving data with regard to two pixels."
The objections to drawings are overcome.

No new matter is introduced. Consideration of the amendments to the drawings is
respectfully requested.

15

2. Amendments to the Specification

Paragraphs [0025] and [0026] are amended to clearly introduce the detecting circuits 71, 81
fully supported by claims 30 & 32 and the paragraph [0029]: "...the TFT LCD has a
20 detecting circuit such as a XOR logic circuit for digital driving data or a
comparator for analog driving data to compare driving data with regard to
two pixels."

No new matter is introduced. Consideration of the amendments to the specification is
25 respectfully requested.

3. Amendments to the Claims

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Claim 1 is currently amended and merges the matter previously claimed in claims 14 and 18.
In addition, the limitation "the operating voltages" recited in claim 1 is amended to read
"operating voltages" to overcome the 35 U.S.C. 112 rejections.

5

Claims 14 and 18 are cancelled, and the dependency of claims 15-17 and 19 is amended accordingly.

Claim 28 is cancelled.

10

Claims 29 and 34 are amended to include the limitation "during a display data driving period," which is fully supported by Fig. 8 and paragraph [0008] "a method for driving an LCD monitor which can make pixels located in the same row of the LCD panel have the same target level so as to display a uniform gray level."

15

Claims 30 and 32 are amended to include the limitation "a detecting circuit for selectively turning on said third switch according to the first voltage and the second voltage", which is fully supported by paragraph [0029], "... detecting circuit such as a XOR logic circuit for digital driving data or a comparator for analog driving data to compare driving data with regard to two pixels..." and again in paragraph [0029], "...the switch S2 related to these two pixels is turned on according to a comparison result generated from the XOR logic circuit or the comparator...".

20

Claim 39 is amended to correct a typographical error and include the limitation fully supported by paragraph [0025] "...if the operational amplifiers 72, and 73 prepare to drive corresponding pixels toward the same gray level through data lines DL1, and DL2, the switch S2 related to the operational amplifiers 72, and 73 is then turned on."

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No new matter is introduced. Consideration of these amendments is respectfully requested.

4. Claim Rejections

- 5 **Claims 1, 3-8, 13, and 28 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akimotot et al. (Patent No.: US 6,756,962)**

Response:

Claim 1

10

As stated in this Office action, claim 18 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims. Since claim 1 is amended to include limitations of claims 14 and 18, applicants believe that claim 1 has been placed in
15 condition for allowance now. Consideration of amended claim 1 is respectfully requested.

Claims 3-8 and 13

Claims 3-8 and 13 are dependent upon amended claim 1, and should be allowed if
20 amended claim 1 is found allowable.

Claim 28

Claim 28 is cancelled.
25

Claims 9-12, 29, 30-34 and 39 are rejected under 35 USC 103(a) as being unpatentable over Akimoto et. al (Patent No.: US 6,756,962) in view of Udo (Pub. No.: 2002/0050972).

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Response:

Claims 9-12

- 5 Claims 9-12 are dependent upon amended claim 1, and should be allowable if amended claim 1 is found allowable. Consideration of claims 9-12 is respectfully requested.

Claim 29

- 10 Udo teaches using a data driver to operate under a dot inversion driving mode (paragraph [0042], Figs. 2(A) and 2(B)). Therefore, in order to reduce power consumption of changing polarities (from "+" to "-" or from "-" to "+") according to the dot inversion driving mode, Udo discloses placing short-circuiting switches between pixels of the same color. However, as disclosed by Udo in paragraph [0044] "A control circuit 13 puts the outputs of the
- 15 voltage buffer amplifiers B1 to B12 into a high impedance state during each of successive horizontal blanking periods, and during each period, turns on all the short-circuiting switches S1 to S3 and S7 to S9," the cited art short-circuiting switches, therefore, are allowed to be turned on during the horizontal blanking period. As known to those skilled in this art, the blanking period is defined as an interval between the end of the video
- 20 information on one scan line and the start of the video information on the adjacent scan line. In other words, during the horizontal blanking period, the pixels are not driven by video data. Therefore, Udo teaches using this blanking period to render the potentials at the data lines connected to pixels of same color to be almost equal to a common potential. In this way, since the potentials are reset to the common potential in advance during the
- 25 blanking period, the currents consumed in the voltage buffer amplifiers can be reduced during a display data driving period following the blanking period (paragraph [0045]).

In short, Udo fails to teach using the short-circuiting switches during a display data

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driving period for making pixels driven by the same display data toward the same gray level. If the short-circuiting switches disclosed by Udo are turned on during the display data driving period, the display quality is greatly degraded because the driving voltages of different polarities are connected to produce wrong driving voltages.

5

Therefore, since Akimoto fails to teach or suggest the claimed second switch and the claimed feature “ during a display data driving period, said second switch is then selectively turned on to drive the output voltage of said driving units toward an average voltage generated from averaging
10 voltages at output terminals of said driving units” is neither taught nor suggested by Udo, applicants believe that the rejections under 35 U.S.C. 103(a) in view of Akimoto and Udo is overcome. Consideration of amended claim 29 is respectfully requested.

15 Claims 30 and 31

Udo doesn't disclose “detecting according to 1st and 2nd voltages.” Udo's detecting circuit does not teach controlling said third switch according to the first input driving data and the second input driving data. Udo teaches in paragraph [0044] a control circuit that is controlled
20 according to “successive horizontal blanking periods” but does not teach utilizing pixel driving voltages. In other words, during each horizontal blanking period, all of the cited art short-circuiting switches are turned.

Applicants' detecting circuit is controlled by voltages as supported in paragraph [0029],
25 “...detecting circuit such as a XOR logic circuit for digital driving data or a comparator for analog driving data to compare driving data with regard to two pixels...” and again in paragraph [0029], “...the switch S2 related to these two pixels is turned on according to a comparison result generated from the XOR logic circuit or the comparator...”.

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For this reason, the claimed feature “a detecting circuit for selectively turning on said third switch according to the first voltage and the second voltage” is neither taught nor suggested by Udo. Therefore, applicants believe that the rejections under 35 U.S.C. 103(a) in view of Akimoto and Udo is overcome. Consideration of amended claim 30 is respectfully requested.

Claim 31 is dependent upon amended claim 30, and should be allowed if amended claim 30 is found allowable. Consideration of claim 31 is respectfully requested.

Claims 32 and 33

According to the arguments under Claim 30 and 31, the claimed feature “a detecting circuit for selectively turning on said third switch according to the first input driving data and the second input driving data” is neither taught nor suggested by Udo. Therefore, applicants believe that the rejections under 35 U.S.C. 103(a) in view of Akimoto and Udo is overcome. Consideration of amended claim 32 is respectfully requested.

Claim 33 is dependent upon amended claim 32, and should be allowed if amended claim 32 is found allowable. Consideration of claim 33 is respectfully requested

Claim 34

According to Udo's disclosure, it is possible that the potentials connected by a turned-on short-circuiting switch have the same voltage level (i.e., the common voltage). Therefore, Udo's disclosure anticipates “controlling the second switches for connecting the pixels driven

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by the same driving voltage level.” However, referencing the arguments under Claim 29, Udo fails to teach or suggest using the short-circuiting switches during a display data driving period for making pixels driven by the same display data toward the same gray level. Since the claimed feature “during a display data driving period, controlling the second switches for
5 connecting the pixels driven by the same driving voltage level for equalizing voltages applied on the pixels” is neither taught nor suggested by Udo, applicants therefore believe that the rejections under 35 U.S.C. 103(a) in view of Akimoto and Udo is overcome. Consideration of amended claim 32 is respectfully requested.

10 Claim 39

According to the arguments under Claims 30 and 31, the claimed feature “a control circuit, selectively controlling the second switch circuit to connect the two pixels according to corresponding display data or the corresponding driving voltage level” is neither taught nor
15 suggested by Udo. Therefore, applicants believe that the rejections under 35 U.S.C. 103(a) in view of Akimoto and Udo is overcome. Consideration of amended claim 39 is respectfully requested.

Claims 14-17, 21-23, 35, and 37 are rejected under 35 USC 103(a) as being unpatentable over Akimoto et. al (Patent No.: US 6,756,962) in view of Spiotta, et al. (Patent No.: US 5,056,012).
20

Response:

25 Claim 21

Spiotta's application is concerned with a data transfer network for a computer that combines characteristics of both multi-port memory devices and local area networks. However, Akimoto is concerned with liquid crystal image display. Spiotta and Akimoto represent

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unrelated subject matter and therefore incorporating Spiotta's clock controller into Akimoto's display system offers no advantage as per pixel driving control since Spiotta's clock controller is for data transfer.

- 5 In addition, Spiotta teaches using a ring clock signal to clock the serial data bits into the shift register and using a ring sync signal to indicate when a data packet has been transferred (col. 2, lines 53-58, and col. 3, lines 60-66). As shown in Fig. 4 disclosed by Spiotta, the programmable counter 232 counts the clock cycles of the ring clock 13, and the magnitude comparator 234 monitors the counter value to determine the ring sync signal 15. However,
- 10 Akimoto is concerned with liquid crystal image display, and the data transfer in the liquid crystal image display is for display data. If Spiotta's clock controller is incorporate into Akimoto's display system for generating the control signal (i.e., the ring sync signal) for the switches 16, 17 according to data bits of display data, Akimoto's display system fails to operate as the claimed invention. For example, when a piece of display data is received and
- 15 the number of data bits reach a threshold value, Spiotta's clock controller will generate the ring sync signal as shown in Spiotta Fig. 2. If the switch 16 is turned off and the switch 17 is turned on at this moment, Akimoto's display system fails to drive the pixels properly since the received display data are not referenced to drive the corresponding pixels yet.
- 20 Briefly summarized, because Spiotta and Akimoto represent unrelated subject matter and the devices and functions are not similar, applicants assert that the combination is improper. In addition, if Spiotta's clock controller is incorporated into Akimoto's display system, the combination of Akimoto's and Spiotta's teachings still fails to anticipate the claimed feature
- 25 "the output buffers are disconnected from the corresponding pixels, operating voltages inputted into the output buffers are turned off, and the pixels that are driven by the same driving voltage levels are connected for averaging the voltage applied on the pixels according to the predetermined number." Applicants believe that claim 21 has been placed in condition for allowance. Reconsideration of claim 21 is respectfully requested.

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Claims 22 and 23

Claims 22 and 23 are dependent upon claim 21, and should be allowed if claim 21 is found
5 allowable. Reconsideration of claims 22 and 23 is respectfully requested.

Claims 14-17

Claim 14 is cancelled.

10 According to the arguments under Claim 21, applicants assert that the combination is improper, and if Spiotta's clock controller is incorporated into Akimoto's display system, the combination of Akimoto's and Spiotta's teachings still fails to anticipate the claimed limitations of claims 15-17.

15 In addition, claims 15-17 are dependent upon amended claim 1, and should be allowed if amended claim 1 is found allowable. Consideration of claims 15-17 is respectfully requested.

Claims 35 and 37

For the reasons cited under the Claim 21, claims 35 and 37 are patentable over the
20 combination of Akimoto and Spiotta. Reconsideration of claims 35 and 37 is respectfully requested.

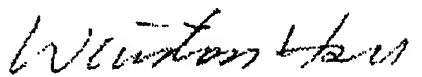
Applicants are grateful for the Examiner's allowance as to claims 36,
38, 40, and 41.

25

Applicants respectfully requests that a timely Notice of Allowance be issued in this case.

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Sincerely yours,



Date: 03/29/2006

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